

WHAT IS CLAIMED IS:

1. A printing method for conducting printing using a printing head in which a plurality of printing elements  
5 are arranged in a column direction and printing on a printing medium is performed by scanning the printing head in a raster direction, the method comprising:

an allocating step of using an  $A \times B$  matrix created by combining a plurality of different  $M \times N$  dot arrangements  
10 in both raster and column directions as a minimum unit, the dot arrangements corresponding to the same level of input image data quantized into multivalued levels, and allocating the dot arrangement in the matrix to the input image data; and

15 a printing step of forming dots on the printing medium on the basis of the dot arrangement of the matrix allocated to the input image data, and

wherein, in the matrix, A kinds of dot arrangements are arranged for each raster, the repetition sequence of the  
20 A kinds of dot arrangements in the raster direction is the same for every raster, and a starting position of the repetition sequence are different in every raster.

2. A printing method according to Claim 1, wherein,  
25 in the matrix, the starting position of the repetition sequence of the A kinds of dot arrangements is shifted by a predetermined number for each raster.

3. A printing method according to claim 1, wherein the matrix is repeatedly used in the raster direction and in the column direction, and the dot arrangement in the matrix  
5 is allocated to the input image data.

4. A printing method according to claim 1, wherein the matrix is a matrix of  $4 \times 4$  created by combining four dot arrangements in the raster direction and in the  
10 column direction, the dimensions of the dot arrangement are set to  $1/600$  inch  $\times$   $1/600$  inch, and the diameter of the dot formed on a printing medium is set to  $30 \mu\text{m}$ .

5. A printing method according to claim 1, wherein  
15 the printing head is a head capable of ejecting ink and the printing element has a ejection opening for ejecting the ink.

6. A printing apparatus for conducting printing using  
20 a printing head in which a plurality of printing elements are arranged in a column direction and printing on a printing medium is performed by scanning the printing head in a raster direction, the apparatus comprising:

allocating means for using an  $A \times B$  matrix created by  
25 combining a plurality of different  $M \times N$  dot arrangements in both raster and column directions as a minimum unit, the dot arrangements corresponding to the same level of

input image data quantized into multivalued levels, and allocating the dot arrangements in the matrix to the input image data; and

printing control means for forming dots on the printing  
5 medium on the basis of the dot arrangement of the matrix allocated to the input image data, and

wherein, in the matrix, A kinds of dot arrangements are arranged for each raster, the repetition sequence of the A kinds of dot arrangements in the raster direction is the  
10 same for every raster, and a starting position of the repetition sequence are different in every raster.

7. A program for conducting printing using a printing head in which a plurality of printing elements are arranged  
15 in a column direction and printing on a printing medium is performed by scanning the printing head in a raster direction, the program allowing a computer to execute:

an allocating step of using an  $A \times B$  matrix created by combining a plurality of different  $M \times N$  dot arrangements  
20 in both raster and column directions as a minimum unit, the dot arrangements corresponding to the same level of input image data quantized into multivalued levels, and allocating the dot arrangement in the matrix to the input image data; and

25 a printing step of forming dots on the printing medium on the basis of the dot arrangement of the matrix allocated to the input image data, and

wherein, in the matrix, A kinds of dot arrangements are arranged for each raster, the repetition sequence of the A kinds of dot arrangements in the raster direction is the same for every raster, and a starting position of the  
5 repetition sequence are different in every raster.

8. A storage medium storing the program according to claim 7 and capable of being read by computer.